

Amendments to the Specification

Please amend the specification as follows:

At page 1, above line 3 insert -- BACKGROUND OF THE INVENTION -- and --
Field of the Invention --.

At page 1, between lines 5 and 6 insert --
Description of the Related Art--.

At page 3, between lines 18 and 19 insert -- SUMMARY OF THE INVENTION --.

At page 4, between lines 3 and 4 insert

-- DETAILED DESCRIPTION OF THE INVENTION --.

Interview Pursuant to 37 C. F. R. §1.133

Applicants thank the Examiner for an interview of June 18, 2003. The prior art of record, U. S. Patent Nos. 4,791,151 (Kowalski *et al.*); 5,147,937 (Frazza *et al.*); and European Patent No. EP 0 288 203 B1 (Cantwell *et al.*), was discussed with Examiner. Informalities in the specification were discussed with the Examiner. Agreement was reached with Examiner to amend claims to further clarify the scope of Applicants invention. Support for amendments to claim 1-8 was discussed with Examiner. Claims 7 and 8 were rewritten as claims depending on claim 1.

Support for Amendments

Support for the amendments to claim 1 of a particulate non-film forming material is found at page 3, line 25; support for a film forming polymer comprising polymer particles having particle diameters small enough to fit in a matrix of interstices formed by the non-film forming particles is at page 3, lines 25-27; support for polymer solids is found at page 6, lines 21-24. Support for the amendment to claim 2 that both the particulate non-film forming material the film forming polymer are prepared from water-borne latex dispersion of polymer particles is found at page 5, lines 18-32; at page 6 lines 26-27 and Examples 5-7, 12 and 13. Support for the amendment to claim 5 that the particle diameters of the film forming polymers are 20% or less in size than particle diameters of the particulate non-film forming material is found at page 6, lines 24-26. Support for the amendment to claim 7 that both the particulate non-film forming material the film forming polymer comprise multi-stage latex polymers at page 4, line 10-17; at page 10, line 27 to page 11, line 27; and Polymers 2-10 at page 19, line 1 to page 24, line 2.

Response to 35 U.S.C. § 112(1st ¶) Rejection of Claims 1-8

The Examiner has rejected Claims 1-8 under 35 U.S.C. 112(1st ¶) as not enabled, since the Examiner asserts the specification and claims are not commensurate in scope. Examiner does find that claims are enabled for a porous film resulting from use of a particulate non-film forming material and film forming polymers whose polymer particles have diameters small enough to fit in a matrix of interstices formed by the non-film forming material. Applicants have amended independent claim 1 to include this characterization of the film forming polymer particles and the characterization the non-forming material is in particulate form. Dependent claims 2-8 also incorporate the amendments. Applicants believe the amendments to claims 1-8 obviate the rejection under 35 U.S.C. 112(1st ¶).

Response to 35 U.S.C. § 112(2nd ¶) Rejection of Claims 1-8

The Examiner has rejected Claims 1-8 under 35 U.S.C. 112(2nd ¶) as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. Examiner asserts the term "pores or channels" in claim 1 is confusing. Applicants point to page 5, lines 14-17 where a porous film is defined as a network of pores or channels throughout the polymer film. Pores are formed by spherical particles and channels are formed by non-spherical particles, including polymers that are multilobal and polymers having large dimensional features (e.g. rods, cones) at page 12. Applicants assert that the polymer films characterization of having pores or channels throughout the film in claim 1 is definite. Claim 2 was amended to clarify that both the particulate non-film forming material the film forming polymer are prepared from water-borne latex dispersion of polymer particles. Support for the amendment is found at page 5, lines 18-32; at page 6 lines 26-27 and Examples 5-7, 12 and 13. Claim 5 was amended so that the particle diameters of the film forming polymers are 20% or less in size than particle diameters of the particulate non-film forming material. Examiner asserts that the term "multistage polymer" in claim 7 is uncertain as to meaning and scope. Applicants respectfully point out that multistage polymers are

clearly described in the specification at page 10, line 27 to page 11, line 27 as polymers having at least two stages differing in monomer composition and are formed in a sequential fashion. A core-shell polymers is a polymer formed by the sequential addition of different monomer charges, the simplest core-shell polymer being a two stage emulsion polymer. Applicants also point to Polymer 1 as compared with Polymers 2-4. In addition, the term "multistage polymer" is well understood by persons having skill in the art of preparing emulsion polymers. Claim 7 was amended so that both the particulate non-film forming material the film forming polymer comprise multi-stage latex polymers. Support for the amendment is found at page 4, line 10-17; at page 10, line 27 to page 11, line 27; and Polymers 2-10 at page 19, line 1 to page 24, line 2. Applicants believe the amendments to claims 1-8 obviate the rejection under 35 U.S.C. 112(2)^{nd ¶}.

Response to 35 U.S.C. § 103(a) Rejection of Claims 1-6

Claims 1-6 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell, *et al.* (EP 0 288 203 B1). Examiner asserts that Cantwell, *et al.* disclose immobilizing microorganisms by producing a polymer film (page 2, lines 49-51) by mixing a latex containing particles of a hard polymer with a latex containing particles of a soft polymer (paragraph bridging page 4 and page 5) and Example 1, page 6, lines 41-48. Examiner further asserts that using both hard and soft film forming polymers enables varying properties of the structure of the polymer produced, the resulting polymer structure having optimum properties (page 4, lines 55-58) and that persons having skill in the art can determine by experimentation the composition of a mixture of hard and soft polymers (page 5, lines 1-3). Applicants respectfully submit that all of the limitations of a claim must be considered in establishing a *prima facie* case of obviousness under 35 U.S.C. §103(a). Cantwell *et al.* neither discloses teaches or suggests all limitations of Applicants invention, namely a non-friable polymer film comprising a blend of a particulate non-film forming material and a film forming polymer comprising polymer particles having particle diameters small enough to fit in a matrix of interstices formed by the non-film forming particles, wherein the film forming polymer is present in the blend from between 5 and 35%, based on the total volume of polymer solids. Cantwell *et al.*

neither discloses teaches or suggests a porous film having a network of pores or channels. The intimate mixture of an aqueous latex film taught by Cantwell *et al.* is flocculated. Flocculation is the coagulation or precipitation of the latex polymer dispersion. Applicants used a polymer disclosed in Cantwell *et al.* as a comparative Example 8. Applicants point to page 26, lines 5-16. The results of 50:50 blend of a soft polymer latex and a hard polymer latex in the present application show that in the absence of a flocculant the blend does not form a porous or a friable film. Applicants results show that it is possible to obtain porous films without the aid of a flocculant if the soft film forming binder is between 5% and 35% of the volume of the film, a characterization clearly not taught or suggested in EP 0 288 203 B1. Applicants submits the invention as presented in amended claims 1-6 is patentable over Cantwell *et al.* of record.

Response to 35 U.S.C. § 103(a) Rejection of Claims 7 and 8

Claims 7-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Cantwell, *et al.* (EP 0 288 203 B1) in view of U. S. Patent Nos. 4,791,151 (Kowalski *et al.*) and 5,147,937 (Frazza *et al.*). Examiner asserts that it would have been obvious to prepare the polymer particles of Cantwell *et al.* using the multistage polymers for its function as suggest by Kowalski *et al.* and Frazza *et al.*. Applicants respectfully submit that all of the limitations of a claim must be considered in establishing a *prima facie* case of obviousness under 35 U. S. C. §103(a). Moreover, Applicants respectfully argue there is no motivation to combine the references and the burden to combine the references has not been met by the Examiner. Applicants clearly state at page 3 of the specification that current aqueous latex polymer technology as described by patents including Kowalski *et al.* and Frazza *et al.* utilizes the process of latex film formation to prepare continuous, non-porous polymer films. Moreover, polymers made using aqueous latex technology of Kowalski *et al.* and Frazza *et al.* affords films with no porosity. The preparation of permanently porous polymer films from water borne latex dispersions such that film formation occurs at ambient temperature, resulting in non-friable porous films that retain their porosity at elevated temperatures and for long periods of time has been a long recognized problem. Applicants invention has provided a solution to the longstanding

problem. Applicants submits the invention as presented in amended claims 7 and 8 is patentable over Cantwell *et al.* of record.

In summary, independent claim 1 as amended and amended dependent claims 2-8 are patentable over the prior art documents of record.

If the Examiner finds that there are some remaining issues to be resolved, Applicants would appreciate the Examiner to grant them a discussion or another interview pursuant to 37 C. F. R. §1.133, to clarify any remaining issues and to place the Application in better condition for allowance. Please charge any fees associated with this response to Deposit Account No. 18-1850. Applicants invite the Examiner to contact the undersigned to discuss any issues related to this application by telephone.

Respectfully submitted,



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